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## ATTACHMENT A

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JUVENILE VEHICLE SEAT ARMREST

This application claims priority under 35 U.S.C. 119(e) to U.S. Provisional Application Serial No. 60/234,543, filed September 22, 2000, which is expressly incorporated by reference herein.

Background and Summary of the Invention

The present invention relates to armrests, and particularly, to armrests used with juvenile seats. More particularly, the present invention relates to cantilevered armrests for use with juvenile vehicle seats.

Armrests are frequently used on various chairs for children as well as adults, to provide support for the arms. [Arm. rests] <sup>Armrests</sup> also can provide greater comfort when one is seated for long periods. When children travel, discomfort can lead to restlessness. Armrests connected to juvenile vehicle seats provide support for a child's arms, so that the child may be seated more comfortably during travel.

According to the present disclosure, a juvenile vehicle seat assembly includes a seat and a cantilevered armrest projecting from a seat back included in the seat. The cantilevered armrest includes an arm and a support mount appended to the arm and coupled to the seat back to support the arm in a cantilevered position. A first fastener is coupled to the seat back and the support mount at a location above the arm to fix the cantilevered armrest to the seat back.

In preferred embodiments, the support mount is formed to include a rearwardly facing U-shaped channel sized and shaped to receive a forwardly facing side edge of the seat back therein. A second fastener is coupled to the seat back and support mount at a location below the arm and below the first fastener. A load support panel is provided in the cantilevered armrest and arranged to engage the forwardly facing side edge of the seat back to block movement of the cantilevered armrest about a pivot axis established by the first fastener.

Additional features of the invention will become apparent to those skilled in the art upon consideration of the following detailed description of preferred embodiments exemplifying the best mode of carrying out the invention as presently perceived.

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Brief Description of the Drawings

The detailed description particularly refers to the accompanying figures in which:

Fig. 1 is a perspective view of a juvenile vehicle seat showing a pair of cantilevered armrests and showing a fabric-covered right armrest and an uncovered monolithic left armrest;

Fig. 2 is an enlarged perspective view of the left cantilevered armrest of Fig. 1 showing that the monolithic armrest includes an arm and a support mount configured to receive two fasteners;

Fig. 3 is a sectional view of the left cantilevered armrest of Fig. 1 showing the support mount of the cantilevered armrest coupled to a side edge of the seat back of the juvenile vehicle seat, a first fastener above the arm, a second fastener below the arm, and an angled load support panel positioned to lie inside the armrest and in contact with a forwardly-facing surface of the side edge of the seat back;

Fig. 4 is a top plan view of the left cantilevered armrest of Fig. 1;

Fig. 5 is a bottom plan view of a left cantilevered armrest after it has been uncoupled from the seat back showing the formation of a somewhat "U-shaped" channel sized to receive a side edge of the seat back therein and showing the shape and location of the angled load support panel mounted inside the armrest and adjacent to the U-shaped channel;

Fig. 6 is a side elevation view of the left cantilevered armrest of Figs. 1 and 2 taken along line 6-6 of Fig. 5;

Fig. 7 is a partial front elevation view of the juvenile vehicle seat of Fig. 1, but showing the juvenile vehicle seat without the seat cover to illustrate the seat back and forwardly-facing left and right side edges that are adapted to be received in the U-shaped channels formed in the support mounts of the cantilevered armrests as suggested, for example, in Figs. 3, 4, and 5;

Fig. 8 is an enlarged perspective view of the left cantilevered armrest of Fig. 1 showing that the rearwardly-facing support mount is configured to be received in the forwardly-facing side edge and secured by two fasteners;

Fig. 9 is a perspective view of a portion of the left side of the juvenile vehicle seat of Fig. 1 showing an arm cover as it is about to be slipped onto an uncovered arm of the left cantilevered armrest; and

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Fig. 10 is a sectional view of the left cantilevered armrest and arm cover taken along line 10-10 of Fig. 9 after the arm cover is slipped onto the arm and coupled to the seat back by passing a strap (shown in Fig. 9) through an aperture formed in the seat back and coupling a free end of the strap to the arm cover by means of, for example, a hook-and-loop fastener.

*is monolithic as shown, for example, in Figs. 2, 3, and 5 and*

#### Detailed Description of the Drawings

A juvenile seat assembly 15 includes a juvenile seat 13 and a pair of cantilevered armrests 10 as shown in Figs. 1-3. Each cantilevered armrest 10 projects away from a seat back 14 included in juvenile seat 13 as shown in Fig. 1. Each cantilevered armrest 10 includes an arm 11 and a support mount 12 appended to arm 11 and coupled to seat back 14 to support arm 11 in a cantilevered position above a seat bottom 24 included in juvenile seat 13. Arm 11 provides an area to support a forearm of an occupant, such as a child, while support mount 12 couples armrest 10 to juvenile seat 13. A first fastener 88 is coupled to seat back 14 and support mount 12 at a location above arm 11 to couple each cantilevered armrest 10 to seat back 14 as shown in Figs. 1-3 and 8.

*monolithic*

Support mount 12 is formed to include a rearwardly facing U-shaped channel 70 sized and shaped to receive a forwardly-facing side edge 16 of seat back 14 of juvenile seat 13, as illustrated, for example, in Figs. 2-5 and 8. A second fastener 89 is coupled to seat back 14 and support mount 12 at a location below arm 11 and below first fastener 88 as shown in Figs. 1-3. A load support panel 67 is provided in cantilevered armrest 10 and arranged to abut forwardly-facing side edge 16 of seat back 14 to block movement of cantilevered armrest 10 about a pivot axis 85 established by first fastener 88 as shown best in Figs. 1 and 3.

A pair of cantilevered armrests 10 project from juvenile seat 13, armrests 10 being adapted to firmly couple to juvenile seat 13, as shown in Figs. 1-4. Juvenile seat 13 may be any juvenile seat, but preferably is a juvenile vehicle seat used to hold a child in a vehicle. A portion of seat cover 58 is moved away from, as suggested in Fig. 1, left side ridge 16 of seat back 14 and support mount 12 is positioned to lie against at least a portion of left side ridge 16.

*located alongside another side of backrest 17*

Referring now to Fig. 1 and 7, juvenile seat 13 includes a seat back 14 which includes a left side edge or ridge 16 and a right side edge or ridge 18. Left side

*a backrest 17,*

*located alongside one side of backrest 17,*

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backrest 17

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ridge 16 is positioned to lie in a spaced-apart relation relative to right side ridge 18, and [median portion] of seat back 14 is positioned to lie between left and right side ridges 16, 18. Seat back 14 also has an upper end 20 and a lower end 22. Seat bottom 24 has a front side 26 and a back side 28, and back side 28 is positioned to lie against a portion of lower end 22 of seat back 14.

Left and right side ridges 16, 18 illustrated in Figs. 1, 2, and 7 of seat back 14 include a pair of inner panels 32, 34 and a pair of outer panels 36, 38. Inner panels 32, 34 are connected to outer panels 36, 38 at a rounded apex 39. Inner panels 32, 34 are positioned to lie in a spaced-apart relation relative to outer panels 36, 38.

Outer panels 36, 38 include an outer edge 40, 42, as shown in Fig. 7. The junction of inner panels 32, 34 and outer panels 36, 38 at rounded apex 39 form left and right side ridges 16, 18 as illustrated, for example, in Figs. 4 and 7-8, of seat back 14 on an outside surface 44 of the juvenile seat 12. Left and right side ridges 16, 18 form a pair of recesses forming seat-belt notches 52, 54. raised seat ridges

Juvenile seat 13 also includes left and right [flanks] 55, 56, which are positioned to lie in a spaced apart relation relative to one another, as shown in Fig. 1. raised seat ridges  
 Seat bottom 24 is positioned to lie between left and right [flanks] 55 and 56. raised seat ridges  
assembly 13 also includes a pad that  
 seat [13] includes seat cover 58, which extends over seat back 14, left and right side [panels] 16, 18, seat bottom 24, and left and right [flanks] 55, 56. raised seat ridges

ridges Each cantilevered armrest 10 has a pair of Y-shaped side walls as suggested in Figs. 5 and 6. Arm 11 includes an inner side 60, an outer side 61, a top surface 62, and an open lower side 63 having a lower edge 64. Open lower side 63 has a least two inner panels 65 providing support for open lower side. Arm 11 includes free end 66 and, at an opposite end, a load support panel 67. Top surface 62 of arm 11 is adapted to support the forearm of a child occupant (not shown) of the juvenile seat 13.

Support mount 12 of each cantilevered armrest 10 is coupled to seat back 14 by two fasteners 88, 89 which cooperate to form a retainer. Support mount 12 is formed to include a rearwardly-facing open channel 70 which extends above the arm 11 and has a U-shape as shown in Fig. 5 or other suitable shape. Support mount 12 is also formed to include inner and outer flange 72, 74 which are coupled to arm 11. Outer flange 74 is positioned to lie in a spaced-apart relation to inner flange 72 to receive left or right side ridge 16, 18 of seat back 14 in open U-shaped channel 70.

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Inner flange 72 includes upper wing 75 and lower wing 76. Outer flange 74 also includes upper wing 77 and lower wing 78. Upper wing 75 of inner flange 72 and upper wing 77 of outer flange 74 are positioned to lie in a spaced-apart relation to one another and are positioned to rise above arm 11 and away from seat bottom 24. Similarly, lower wing 76 of inner flange 72 and lower wing 78 of outer flange 74 are also positioned to lie in a spaced-apart relation to one another and extend below arm 11 and toward seat bottom 24.

Referring to Fig. 6, inner flange 72 is configured to conform generally to contours of inner panels 32, 34 of seat back 14. Outer flange 74, as illustrated in Figs. 2 and 6, is similarly configured to conform generally to contours of outer panels 36, 38 of seat back 14. Rearwardly-facing open U-shaped channel 70 of support mount 12 is adapted to receive and conform to contours of forwardly-facing side edges 16, 18 of seat back 14 above arm 11, and particularly contours of rounded apex 39, as shown in Figs. 3 and 4. Inner flange 72 is positioned to lie at an angle relative to outer flange 74 such that cantilevered armrests 10 are positioned to lie in a general vertical alignment with raised seat ridges [seat flanks] 55, 56, as illustrated in Figs. 1, 4, and 5. As such, cantilevered armrests 10 are not identical, right cantilevered armrest being a mirror image of left cantilevered armrest.

Open U-shaped channel 70 of support mount 12, as shown in Figs. 3-5, is formed to extend above arm 11 and is positioned to lie against, for example, left side ridge 16, and particularly [particular] against rounded apex 39 of left side ridge 16. At the level of arm 11, load support panel 67 is positioned to lie against left side ridge 16, against rounded apex 39.

Load support panel 67 is positioned to lie at a junction of open lower side 63 of arm 11 and support mount 12 and is arranged to lie in a fixed position relative to arm 11 and support mount 12. As shown best in Fig. 3, load support panel 67 is formed to lie at an obtuse angle 79 relative to a downwardly facing wall 77 of arm 11, and has an upper end 80, and side walls 81. Upper end 80 abuts upper wall 82 of open lower side 63 and side walls 81 abut a portion of side walls 83 of open lower side 63. Side walls 81 of load support panel 67 also connect to a portion of inner and outer flanges 72, 74, due to the angle in which load support panel 67 is positioned. Load support panel 67 includes a lower edge 84 positioned to abut left or right side ridges 16, 18.

**ATTACHMENT B****JUVENILE VEHICLE SEAT ARMREST**

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This application claims priority under 35 U.S.C. 119(e) to U.S. Provisional Application Serial No. 60/234,543, filed September 22, 2000, which is expressly incorporated by reference herein.

**Background and Summary of the Invention**

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Armrests are frequently used on various chairs for children as well as adults, to provide support for the arms. Armrests also can provide greater comfort when one is seated for long periods. When children travel, discomfort can lead to restlessness. Armrests connected to juvenile vehicle seats provide support for a child's arms, so that the child may be seated more comfortably during travel.

According to the present disclosure, a juvenile vehicle seat assembly includes a seat and a cantilevered armrest projecting from a seat back included in the seat. The cantilevered armrest includes an arm and a support mount appended to the arm and coupled to the seat back to support the arm in a cantilevered position. A first fastener is coupled to the seat back and the support mount at a location above the arm to fix the cantilevered armrest to the seat back.

In preferred embodiments, the support mount is formed to include a rearwardly facing U-shaped channel sized and shaped to receive a forwardly facing side edge of the seat back therein. A second fastener is coupled to the seat back and support mount at a location below the arm and below the first fastener. A load support panel is provided in the cantilevered armrest and arranged to engage the forwardly facing side edge of the seat back to block movement of the cantilevered armrest about a pivot axis established by the first fastener.

Additional features of the invention will become apparent to those skilled in the art upon consideration of the following detailed description of preferred embodiments exemplifying the best mode of carrying out the invention as presently perceived.

### Brief Description of the Drawings

The detailed description particularly refers to the accompanying figures in which:

Fig. 1 is a perspective view of a juvenile vehicle seat showing a pair of cantilevered armrests and showing a fabric-covered right armrest and an uncovered monolithic left armrest;

Fig. 2 is an enlarged perspective view of the left cantilevered armrest of Fig. 1 showing that the monolithic armrest includes an arm and a support mount configured to receive two fasteners;

Fig. 3 is a sectional view of the left cantilevered armrest of Fig. 1 showing the support mount of the cantilevered armrest coupled to a side edge of the seat back of the juvenile vehicle seat, a first fastener above the arm, a second fastener below the arm, and an angled load support panel positioned to lie inside the armrest and in contact with a forwardly-facing surface of the side edge of the seat back;

Fig. 4 is a top plan view of the left cantilevered armrest of Fig. 1;

Fig. 5 is a bottom plan view of a left cantilevered armrest after it has been uncoupled from the seat back showing the formation of a somewhat "U-shaped" channel sized to receive a side edge of the seat back therein and showing the shape and location of the angled load support panel mounted inside the armrest and adjacent to the U-shaped channel;

Fig. 6 is a side elevation view of the left cantilevered armrest of Figs. 1 and 2 taken along line 6-6 of Fig. 5;

Fig. 7 is a partial front elevation view of the juvenile vehicle seat of Fig. 1, but showing the juvenile vehicle seat without the seat cover to illustrate the seat back and forwardly-facing left and right side edges that are adapted to be received in the U-shaped channels formed in the support mounts of the cantilevered armrests as suggested, for example, in Figs. 3, 4, and 5;

Fig. 8 is an enlarged perspective view of the left cantilevered armrest of Fig. 1 showing that the rearwardly-facing support mount is configured to be received in the forwardly-facing side edge and secured by two fasteners;

Fig. 9 is a perspective view of a portion of the left side of the juvenile vehicle seat of Fig. 1 showing an arm cover as it is about to be slipped onto an uncovered arm of the left cantilevered armrest; and

Fig. 10 is a sectional view of the left cantilevered armrest and arm cover taken along line 10-10 of Fig. 9 after the arm cover is slipped onto the arm and coupled to the seat back by passing a strap (shown in Fig. 9) through an aperture formed in the seat back and coupling a free end of the strap to the arm cover by means of, for example, a hook-and-loop fastener.

#### Detailed Description of the Drawings

A juvenile seat assembly 15 includes a juvenile seat 13 and a pair of cantilevered armrests 10 as shown in Figs. 1-3. Each cantilevered armrest 10 is monolithic as shown, for example, in Figs. 2, 3, and 5 and projects away from a seat back 14 included in juvenile seat 13 as shown in Fig. 1. Each cantilevered armrest 10 includes an arm 11 and a support mount 12 appended to arm 11 and coupled to seat back 14 to support arm 11 in a cantilevered position above a seat bottom 24 included in juvenile seat 13. Arm 11 provides an area to support a forearm of an occupant, such as a child, while support mount 12 couples armrest 10 to juvenile seat 13. A first fastener 88 is coupled to seat back 14 and support mount 12 at a location above arm 11 to couple each monolithic cantilevered armrest 10 to seat back 14 as shown in Figs. 1-3 and 8.

Support mount 12 is formed to include a rearwardly facing U-shaped channel 70 sized and shaped to receive a forwardly-facing side edge 16 of seat back 14 of juvenile seat 13, as illustrated, for example, in Figs. 2-5 and 8. A second fastener 89 is coupled to seat back 14 and support mount 12 at a location below arm 11 and below first fastener 88 as shown in Figs. 1-3. A load support panel 67 is provided in cantilevered armrest 10 and arranged to abut forwardly-facing side edge 16 of seat back 14 to block movement of cantilevered armrest 10 about a pivot axis 85 established by first fastener 88 as shown best in Figs. 1 and 3.

A pair of cantilevered armrests 10 project from juvenile seat 13, arm rests 10 being adapted to firmly couple to juvenile seat 13, as shown in Figs. 1-4. Juvenile seat 13 may be any juvenile seat, but preferably is a juvenile vehicle seat used to hold a child in a



vehicle. A portion of seat cover 58 is moved away from, as suggested in Fig. 1, left side ridge 16 of seat back 14 and support mount 12 is positioned to lie against at least a portion of left side ridge 16.

*al*  
*conf*  
Referring now to Fig. 1 and 7, juvenile seat 13 includes a seat back 14 which includes a backrest 17, a left side edge or ridge 16 located alongside one side of backrest 17, and a right side edge or ridge 18 located alongside another side of backrest 17. Left side ridge 16 is positioned to lie in a spaced-apart relation relative to right side ridge 18, and backrest 17 of seat back 14 is positioned to lie between left and right side ridges 16, 18. Seat back 14 also has an upper end 20 and a lower end 22. Seat bottom 24 has a front side 26 and a back side 28, and back side 28 is positioned to lie against a portion of lower end 22 of seat back 14.

Left and right side ridges 16, 18 illustrated in Figs. 1, 2, and 7 of seat back 14 include a pair of inner panels 32, 34 and a pair of outer panels 36, 38. Inner panels 32, 34 are connected to outer panels 36, 38 at a rounded apex 39. Inner panels 32, 34 are positioned to lie in a spaced-apart relation relative to outer panels 36, 38.

Outer panels 36, 38 include an outer edge 40, 42, as shown in Fig. 7. The junction of inner panels 32, 34 and outer panels 36, 38 at rounded apex 39 form left and right side ridges 16, 18 as illustrated, for example, in Figs. 4 and 7-8, of seat back 14 on an outside surface 44 of the juvenile seat 12. Left and right side ridges 16, 18 form a pair of recesses forming seat-belt notches 52, 54.

Juvenile seat 13 also includes left and right raised seat ridges 55, 56, which are positioned to lie in a spaced apart relation relative to one another, as shown in Fig. 1. Seat bottom 24 is positioned to lie between left and right raised seat ridges 55 and 56. Juvenile seat assembly 15 also includes a seat cover 58, which includes a pad that extends over seat back 14, left and right side ridges 16, 18, seat bottom 24, and left and right raised seat ridges 55, 56.

Each cantilevered armrest 10 has a pair of Y-shaped side walls as suggested in Figs. 5 and 6. Arm 11 includes an inner side 60, an outer side 61, a top surface 62, and an open lower side 63 having a lower edge 64. Open lower side 63 has at least two inner panels 65 providing support for open lower side. Arm 11 includes free end 66 and, at an opposite

end, a load support panel 67. Top surface 62 of arm 11 is adapted to support the forearm of a child occupant (not shown) of the juvenile seat 13.

Support mount 12 of each cantilevered armrest 10 is coupled to seat back 14 by two fasteners 88, 89 which cooperate to form a retainer. Support mount 12 is formed to include a rearwardly-facing open channel 70 which extends above the arm 11 and has a U-shape as shown in Fig. 5 or other suitable shape. Support mount 12 is also formed to include inner and outer flange 72, 74 which are coupled to arm 11. Outer flange 74 is positioned to lie in a spaced-apart relation to inner flange 72 to receive left or right side ridge 16, 18 of seat back 14 in open U-shaped channel 70.

Inner flange 72 includes upper wing 75 and lower wing 76. Outer flange 74 also includes upper wing 77 and lower wing 78. Upper wing 75 of inner flange 72 and upper wing 77 of outer flange 74 are positioned to lie in a spaced-apart relation to one another and are positioned to rise above arm 11 and away from seat bottom 24. Similarly, lower wing 76 of inner flange 72 and lower wing 78 of outer flange 74 are also positioned to lie in a spaced-apart relation to one another and extend below arm 11 and toward seat bottom 24.

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Open U-shaped channel 70 of support mount 12, as shown in Figs. 3-5, is formed to extend above arm 11 and is positioned to lie against, for example, left side ridge 16, and particularly against rounded apex 39 of left side ridge 16. At the level of arm 11, load support panel 67 is positioned to lie against left side ridge 16, against rounded apex 39.

~~Load support panel 67 is positioned to lie at a junction of open lower side 63 of arm 11 and support mount 12 and is arranged to lie in a fixed position relative to arm 11 and~~

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~~support mount 12. As shown best in Fig. 3, load support panel 67 is formed to lie at an obtuse angle 79 relative to a downwardly facing wall 77 of arm 11, and has an upper end 80, and side walls 81. Upper end 80 abuts upper wall 82 of open lower side 63 and side walls 81 abut a portion of side walls 83 of open lower side 63. Side walls 81 of load support panel 67 also connect to a portion of inner and outer flanges 72, 74, due to the angle in which load support panel 67 is positioned. Load support panel 67 includes a lower edge 84 positioned to abut left or right side ridges 16, 18.~~